

**NJDOT Bureau of Research
QUARTERLY PROGRESS REPORT**

Project Title: Cost Benefit Analysis Modification to Project 2001-01, Computer Modeling and Simulation of New Jersey Signalized Highways	
RFP Number: 2003-01	NJDOT Research Project Manager: Karl Brodtman
Task Order Number/Study Number: TO-52	Principal Investigator: Chien, Steven I-Jy
Project Starting Date: 01/01/2004	Period Starting Date: 7/01/2004
Original Project Ending Date: 12/31/2004	Period Ending Date: 9/30/2004
Modified Completion Date: 06/30/2005	

Task	% of Total	% of Task this quarter	% of Task to date	% of Total Complete
Task 1 Literature Review	10	0	100	10
Task 2 Benefit to Cost Analysis	70	30	40	28
Task 3 Development of Tutorial for the NJDOT Engineers	10	0	0	0
Final Report	10			
TOTAL	100 %			38.0 %

Project Objectives:

The research team at NJIT (currently conducting the NJDOT Project 2001-01) consisting of experienced/trained research members, will be responsible to achieve the following objectives:

- (1) Review, investigate, and summarize the state-of-the-art methodology for conducting cost and benefit analysis. The necessary data required for developing the proposed methodology will be identified.
- (2) Develop a cost model required for re-timing the signals at both studied segments.
- (3) Develop a benefit model to estimate the saving of road users' delay and vehicle operating cost as well as the mitigation of resulting environmental impact contributed from the re-timing of the signals.
- (4) Conduct cost and benefit analysis for both studied segments.

Project Abstract:

In order to continue its efforts to improve traffic flow through traffic signal enhancements, NJDOT is seeking to establish an on-going program to routinely update and upgrade traffic signals on key state highway corridors. While a number of research studies generally show significant benefits of signal optimization, NJDOT would require more specific cost justification in order to establish a regular, ongoing program for traffic signal upgrades. Therefore, NJDOT has requested that the preparation of a proposal to determine cost/benefit ratios of implementing recommended signal enhancements for the two

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study corridors.

The purpose of developing a methodology and integrating simulation/optimization models to conduct the proposed cost and benefit analysis project for NJDOT Project 2001-01 is to provide a basis for the optimization of other non-interconnected signalized intersections in other areas throughout the State and aide in the reduction of traffic, congestion and congestion costs on the two studied roadway segments in NJDOT Project 2001-01.

1. Progress this quarter by task:

1. More literature review n STEAM and IDAS were requested and performed.
2. Developing models for calculating/convertng simulation results (travel times, vehicle emissions, and fuel consumption) to monetary value.
3. Conduct before and after (cost/benefit analysis) study for Rt. 23 based on approved optimal singal timing directives.

2. Proposed activities for next quarter by task:

1. Continuing cost/benefit (C/B) analysis for Rt. 23
2. Producing tables and figures to summarize C/B analysis for Rt. 23
2. Conducting C/B analysis for Rt. 42/322

3. List of deliverables provided in this quarter by task (product date):

4. Progress on implementation and training activities:

5. Problems/proposed solutions:

6. Budget summary:

Total Project Budget	\$80,283.00
Modified Contract Amount	\$0.00
Total Project Expenditure to date	\$15,804.00
% of Total Project Budget Expended	19.69%